

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Canceled).

Claim 2 (Currently Amended): A three-dimensional pointing method, comprising:  
pointing at a desired point in a virtual three-dimensional space represented on a display apparatus based on two-dimensional coordinates on a predetermined detection plane of the display apparatus of a position that is pointed at by a pen tip of an input pen in a real three-dimensional space, pen pressure that is pressure applied to the pen tip of the input pen, an inclination angle that is an angle between an axis of the input pen and the detection plane in the real three-dimensional space, and a direction angle that is an angle between a projection of the axis of the input pen onto the detection plane and a predetermined line on the detection plane;

generating an extension of the axis of the input pen in the real three-dimensional space in the virtual three-dimensional space, based on the inclination angle and the direction angle of the input pen in the real three-dimensional space, by extending the axis of the input pen from the real three-dimensional space into the virtual three-dimensional space;

displaying a three-dimensional pointer on the display apparatus on the extension of the axis of the input pen into the virtual three-dimensional space; and

changing a coordinate of the three-dimensional pointer in the direction of the extension into the virtual three-dimensional space according to the pen pressure of the input pen, and displaying the three-dimensional pointer on the display apparatus based on the changed coordinate.

Claims 3-4 (Canceled).

Claim 5 (Withdrawn): The three-dimensional pointing method as claimed in claim 2, wherein it is determined that an object is pointed at when the object exists within a predetermined distance from three-dimensional coordinates of a point at which the three-dimensional pointer points.

Claim 6 (Withdrawn): The three-dimensional pointing method as claimed in claim 2, wherein, when an object displayed in the three-dimensional space is pointed at with the three-dimensional pointer, if operation for selecting or holding the object is performed,

the three-dimensional position of the object is changed according to change of the three-dimensional position of the three-dimensional pointer after the operation for selecting or holding the object is performed, and the object is displayed.

Claim 7 (Withdrawn): The three-dimensional pointing method as claimed in claim 2, wherein, when an object displayed in the three-dimensional space is pointed at with the three-dimensional pointer, if operation for starting to operate, edit or process the object is performed,

the object that is pointed at is displayed two-dimensionally on a plane, of the display apparatus, that is closest to an operator, and

the two-dimensionally displayed object accepts the two-dimensional operation, editing, or processing by the input pen.

Claim 8 (Withdrawn): The three-dimensional pointing method as claimed in claim 2, wherein the two-dimensional coordinates of the position at which the pen tip of the input pen points on the detection plane is regarded as two-dimensional coordinates of the point at which

the three-dimensional pointer points, and the depth direction coordinate of the three-dimensional pointer is changed while keeping the two-dimensional coordinates of the point at which the three-dimensional pointer points to be constant.

Claims 9-11 (Canceled).

Claim 12 (Withdrawn): The three-dimensional pointing apparatus as claimed in claim 13, wherein

the object generation unit changes a three-dimensional position of the object according to a change of a three-dimensional position of the three-dimensional pointer to generate the object, and

when an object displayed in the virtual three-dimensional space is pointed at with the three-dimensional pointer, if operation for selecting or holding the object is performed, the three-dimensional position of the object is changed according to change of the three-dimensional position of the three-dimensional pointer after the operation for selecting or holding the object is performed, and the object is displayed.

Claim 13 (Currently Amended): A three-dimensional pointing apparatus, comprising:  
a display apparatus to represent a generated pointer at a desired point in a virtual three-dimensional space;

an input information obtaining unit configured to obtain information of two-dimensional coordinates on a predetermined detection plane of the display apparatus of a position that is pointed at by a pen tip of an input pen in a real three-dimensional space and a pen pressure, which is pressure applied to the pen tip of the input pen;

a pointer position/rotation angle calculation unit configured to calculate a position and a rotation angle of the pointer to be generated and displayed in the virtual three-dimensional space represented on the display apparatus based on the information obtained by the input information obtaining unit;

a pointer generation unit configured to generate the pointer based on the calculation result of the pointer position/rotation angle calculation unit;

a pointing determination unit configured to determine whether there is an object that is pointed at by the pointer generated by the pointer generation unit in the virtual three-dimensional space represented on the display apparatus;

an object generation unit configured to generate the object to be displayed in the virtual three-dimensional space represented on the display apparatus; and

a display control unit configured to display the pointer generated by the pointer generation unit and the object generated by the object generation unit in the virtual three-dimensional space represented on the display apparatus, wherein

the pointer position/rotation angle calculation unit changes a depth direction coordinate of the three-dimensional pointer to be displayed in the virtual three-dimensional space according to the pen pressure of the input pen in the calculation,

in addition to the information of the two-dimensional coordinates and the pen pressure, the input information obtaining unit obtains an inclination angle that is an angle between an axis of the pen and the detection plane, and a direction angle that is an angle between a projection of the axis of the input pen onto the detection plane and a predetermined line on the detection plane, and

the pointer position/rotation angle calculation unit (1) generates an extension of the axis of the input pen in the real three-dimensional space in the virtual three-dimensional space, based on the inclination angle and the direction angle of the input pen, by extending

the axis of the input pen from the real three-dimensional space into the virtual three-dimensional space, (2) sets a position of a three-dimensional pointer to be on the extension in the virtual three-dimensional space, and (3) performs the calculation by changing a coordinate of the three-dimensional pointer in the direction of the extension in the virtual three-dimensional space according to the pen pressure of the input pen.

Claims 14-15 (Canceled).

Claim 16 (Withdrawn): The three-dimensional pointing apparatus as claimed in claim 13, the object generation unit further configure to, when an object displayed in the virtual three-dimensional space is pointed at, if operation for starting to operate, edit or process the object is performed, generate an object that is a projection of the pointed object at onto a plane, of the display apparatus, that is closest to an operator.

Claim 17 (Withdrawn): The three-dimensional pointing apparatus as claimed in claim 16, wherein, after the object two-dimensionally displayed on the closest plane accepts the two-dimensional operation, editing, or processing with the input pen, when operation for ending the operation, editing, or processing for the object is performed, the object generation means generates an object obtained by restoring the two-dimensionally displayed object to a three-dimensionally display state just before the operation for starting the operation, editing or processing is performed.

Claim 18 (Withdrawn): The three-dimensional pointing apparatus as claimed in claim 13, wherein the input pen has a structure in which the length of the pen tip is shortened according to the pen pressure, and

the three-dimensional pointer has a shape similar to the pen tip of the input pen, or a shape similar to a part of the pen tip.

Claim 19 (Canceled).

Claim 20 (Withdrawn): The three-dimensional pointing apparatus as claimed in claim 13, wherein the pointer position/rotation angle calculation unit sets the two-dimensional coordinates of the point at which the three-dimensional pointer points to be the two-dimensional coordinates of the position at which the pen tip of the input pen points on the detection plane, and changes the depth direction coordinate of the three-dimensional pointer while keeping the two-dimensional coordinates of the point at which the three-dimensional pointer points to be constant.

Claim 21 (Previously Presented): A computer readable storage medium including three-dimensional pointing instructions for causing a computer to execute processes in each unit of the three-dimensional pointing apparatus as claimed in claim 13.

Claims 22-50 (Canceled).